ABSTRACT OF THE DISCLOSURE

This invention relates to a new class of proteins called expansins, and methods related thereto are presented. This class of proteins can be characterized as catalysts of the extension of plant cell walls and the weakening of the hydrogen bonds in pure cellulose. Two proteins have been isolated from washed wall fragments of cucumber hypocotyls, referred to as "cucumber expansin-29" and "cucumber expansin-30". Moreover, three peptide fragments from the purified cEx-29 protein were sequenced, then oligonucleotide primers were designed to amplify a portion of the expansin cDNA using polymerase chain reaction with a cDNA template derived from cucumber seedlings, and then the PCR fragment was used to screen a cDNA library to identify full length clones. Another expansin protein has.been isolated from oat coleoptiles (oat expansin oEx-29), while three additional expansin sequences have been identified in *Arabidopsis* and an additional two in rice.